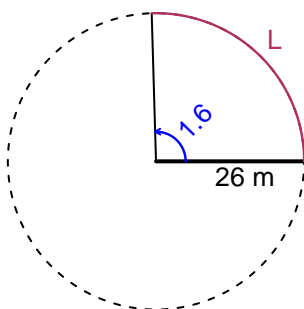## Trig Final (TEST v614)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 1.6 radians. The radius is 26 meters. How long is the arc in meters?
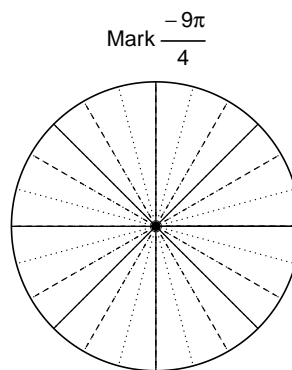

Question 2

Consider angles $\frac{7\pi}{3}$ and $\frac{-9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{7\pi}{3}\right)$ and $\sin\left(\frac{-9\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{7\pi}{3}$

Find cos(7π/3)

Mark $\dfrac{-9\pi}{4}$
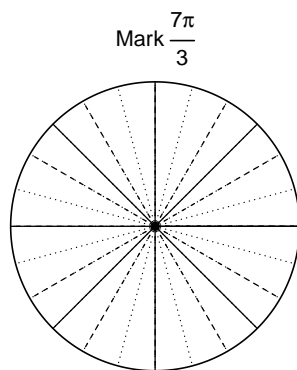
Find sin(−9π/4)

Question 3

If $\sin(\theta) = \frac{12}{13}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 5.42 meters, a frequency of 3.73 Hz, and a midline at $y = 8.11$ meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).